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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,364	02/07/2006	Isao Saito	SAE-0037	2443

23353 7590 10/20/2008

RADER FISHMAN & GRAUER PLLC
LION BUILDING
1233 20TH STREET N.W., SUITE 501
WASHINGTON, DC 20036

EXAMINER	
LEWIS, PATRICK T	

ART UNIT	PAPER NUMBER
1623	

MAIL DATE	DELIVERY MODE
10/20/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,364	SAITO ET AL.	
	Examiner	Art Unit	
	Patrick T. Lewis	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 February 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's Response Dated July 3, 2008

1. Claims 1-8 are pending. An action on the merits of claims 1-8 is contained herein below.

2. The rejection of claims 1-8 under 35 U.S.C. 112, second paragraph, is maintained for the reasons of record as set forth in the Office action mailed on January 3, 2008.

3. The rejection of claims 1-8 under 35 U.S.C. 103(a) is maintained for the reasons of record as set forth in the Office action mailed on January 3, 2008.

Rejections of Record Set Forth in the Office Action Dated January 3, 2008

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 6, the recited parenthetical phrase renders the claim indefinite because it is unclear whether the limitations within the parentheses are part of the claimed invention. See MPEP § 2173.05(d). Additionally, the terms "functional unit", "a reporter unit" and "biofunctional molecule" are not defined by the specification.

Without further guidance, one of ordinary skill in the art would not be apprised of the metes and bounds of the instant invention.

6. Applicant's arguments filed July 3, 2008 have been fully considered but they are not persuasive. Applicant argues that paragraph [0040] defines the terms in question. The examiner respectfully disagrees. Paragraph [0040] does not set limits on said terms; it merely sets forth examples. Though understanding the claim language may be aided by explanations contained in the written description, it is important not to import into a claim limitations that are not part of the claim. For example, a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.

7. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urdea et al. US 4,910,300 (Urdea) and Sorbi et al. US 4,797,480 (Sorbi) in combination.

Claims 1-5 are drawn to a nucleoside, a nucleotide or an oligonucleotide containing thereof represented by formula (I).

Urdea teaches a modified, derivatizable nucleotide of Formula 1 wherein R^1, which is a reactive group derivatizable with a detectable label, is preferably $–NH_2$, -COOH or –SH. R^2 is an optional linker moiety which contains an amide, thioether or disulfide linkage, or a combination thereof (columns 3-4). When the nucleoside is cytosine or a 5-modified cytosine, i.e. substituted with an R^3 other than hydrogen, the exocyclic amino functionality can be converted to an N^4-aminoalkyl or N^4-aminoaryl cytosine by reaction with an alkyl- or aryldiamine (Scheme 1; columns 10-11). Alternatively, where the alkylamine group is more than about 6 carbon atoms long, the

free amine group thereof may directly bond to a suitable detectable label. Urdea further teaches polynucleotide probes using one or more of the modified nucleotides (column 3, lines 42-48). The probe can be used to screen a sample containing a plurality of single-stranded or double-stranded polynucleotide chains, and will label the desired sequence, if present, by hybridization. In order to incorporate non-radioactive types of detectable species in a nucleotide, some sort of chemical modification of the nucleotide is required (column 2, lines 13-25). It is widely recognized that nucleotide modification is a difficult and sensitive procedure. These considerations typically limit nucleotide substitution positions to the 5-position of a pyrimidine and the 8-position of a purine.

Urdea differs from the instantly claimed invention in the Urdea does not explicitly teach purine nucleotides; however it would have been obvious to one of ordinary skill in the art to attach detectable labels to the 8-position of purine using an appropriate linker.

Sorbi teaches biologically active fluorescent cyclic guanosine and adenosine nucleotides wherein a fluorophore is attached at the 8-position through a thioacetamido linkage (columns 1-2). Sorbi further teaches that cyclic nucleotides substituted in position 8 of the base do not lose activity.

It would have been obvious to one of ordinary skill in the art to extend to work to Urdea to purine nucleotides. Although Urdea does not exemplify the production of purine nucleotides, Urdea suggests modification of purines at the 8-position. Additionally, as demonstrated by Sorbi, guanosine and adenosine nucleotides wherein a fluorophore is attached at the 8-position through a linker moiety were known at the

time of the invention. Combining prior art elements according to known methods to yield predictable results, in the instant case, is obvious.

8. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urdea et al. US 4,910,300 (Urdea) and Sorbi et al. US 4,797,480 (Sorbi) in combination as applied to claims 1-5 above, and further in view of Okamoto et al. Angew. Chem. Int. Ed. (2003), Vol. 42, pages 2502-2504. (Okamoto).

Urdea et al. US 4,910,300 (Urdea) and Sorbi et al. US 4,797,480 (Sorbi) do not explicitly teach releasing the R group moiety by oxidation. However, to do so would have been obvious to one of ordinary skill in the art.

Okamoto teaches that DNA hydridization biosensors offer considerable promise for obtaining sequence information of genes in a fast and simple manner (pages 2502-2503). Okamoto further teaches a phototriggered molecule-releasing system by using a molecule beacon strategy. Hybridization of the photoactive probe ODN with the complementary target DNA resulted in a rapid photolytic cleavage of phenacyl ester with the release of biotin, although closed form ODN before hybridization suppresses biotin release due to the intramolecular triplet quenching. The drug release occurs, effectively by UV irradiation when a specific sequence has been recognized. This new drug-releasing system will facilitate the rational design of a well-controllable prodrug for gene analysis.

The selection of an appropriate linker moiety is well within the purview of the skilled artisan. In the instant case, the skilled artisan would have ample motivation for incorporating a photocleavable linker as taught by Okamoto into the labeled nucleotides

of Urdea and Sorbi. The general concept was known at the time of the invention. As set forth supra, this new drug-releasing system of Okamoto will facilitate the rational design of a well-controllable prodrug for gene analysis.

9. Applicant's arguments filed July 3, 2008 have been fully considered but they are not persuasive. Applicant argues that the "...Examiner appears to be arguing that it would be obvious to try to make a substitution at the 8-position of the generic purine...". The examiner respectfully disagrees. As set forth supra, it is the examiner's position that combining prior art elements according to known methods to yield predictable results is obvious. It would have been obvious to one of ordinary skill in the art to extend to work to Urdea to purine nucleotides. Although Urdea does not exemplify the production of purine nucleotides, Urdea suggests modification of purines at the 8-position. As demonstrated by Sorbi, guanosine and adenosine nucleotides wherein a fluorophore is attached at the 8-position through a linker moiety were known at the time of the invention.

Conclusion

10. Claims 1-8 are pending. Claims 1-8 are rejected. No claims are allowed.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick T. Lewis whose telephone number is 571-272-0655. The examiner can normally be reached on Monday - Friday 10 am to 3 pm (Maxi Flex).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dr. Patrick T. Lewis/
Primary Examiner, Art Unit 1623

ptl